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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/713,017	11/17/2003	Shaw Voon Wong	WONG3019/JEK	9735

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EXAMINER
BUSS, BENJAMIN J

ART UNIT	PAPER NUMBER
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Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

PTOL-90A (Rev. 04/07)

	Application No.	Applicant(s)
Office Action Summary	10/713,017	WONG ET AL.
	Examiner	Art Unit	
	Benjamin Buss	2129	

-- *The MAILING DATE of this communication appears on the cover sheet with the correspondence address* --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE <u>3</u> MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1) ☒ Responsive to communication(s) filed on <u>18 September 2007</u>.

2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.

3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4) ☒ Claim(s) <u>9-10 and 12-17</u> is/are pending in the application.

    4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5) ☐ Claim(s) _____ is/are allowed.

6) ☒ Claim(s) <u>9-10 and 12-17</u> is/are rejected.

7) ☐ Claim(s) _____ is/are objected to.

8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9) ☐ The specification is objected to by the Examiner.

10) ☒ The drawing(s) filed on <u>11/17/2003</u> is/are: a)☒ accepted or b)☐ objected to by the Examiner.

    Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

    Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

    a)☒ All b)☐ Some * c)☐ None of:

      1.☒ Certified copies of the priority documents have been received.

      2.☐ Certified copies of the priority documents have been received in Application No. _____.

      3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

    * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)

2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)

3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
    Paper No(s)/Mail Date _____.

4) ☐ Interview Summary (PTO-413)
    Paper No(s)/Mail Date _____.

5) ☐ Notice of Informal Patent Application (PTO-152)

6) ☐ Other: _____.

DETAILED ACTION

This Office Action is in response to an AMENDMENT entered 9/18/2007 for the patent application 10/713,017 filed

on **11/17/2003**. The Office Actions of 5/18/2007, 9/20/2006, and 2/1/2006 are fully incorporated into this Office

Action by reference. Claims 9-10 and 12-17 are pending.

5

Priority

Examiner acknowledges Applicants' claim for foreign priority based on P120024308 filed in Malaysia on 11/18/2002.

Receipt is acknowledged of papers submitted under 35 U.S.C. 119(a)-(d), which papers have been placed of record

in the file.

10

Requirement under 37 CFR 1.105

Response to Arguments

Applicant's remarks, see pages 4-5, filed 9/18/2007, with respect to the Requirement for Information under 37 CFR

1.105 have been fully considered and are persuasive. Examiner thanks Applicant for the response to the

15   Requirement for Information under 37 CFR 1.105.

Examiner has included another publication by Applicant that was not previously part of the application file

and was not submitted by Applicant in response to the Requirement for Information under 37 CFR 1.105. This

publication is: **Wong$_{1997}$** ("Development of a Fuzzy-Based Expert System for Metal Cutting Data Selection").

20   ### _Claim Rejections - 35 USC § 112_

Response to Arguments

Applicant's arguments, see page 5, filed 9/18/2007, with respect to the rejection of claim 12 as being indefinite have

been fully considered and are persuasive. The rejection of claim 12 under 35 U.S.C. §112, second paragraph has

been withdrawn.

25

Claim Rejections - 35 USC § 103

Response to Arguments

Applicant's arguments filed 9/18/2007 have been fully considered but they are not persuasive. In re pages 5-6,

Applicant has argued that the present application is entitled to a priority date of 11/18/2002.

5   Examiner <u>agrees</u> that the instant application has a valid claim for foreign priority based on P120024308 filed

in Malaysia on 11/18/2002, as acknowledged above.

In re page 6, Applicant has further argued that **Wong**_{June2002} ("A fuzzy logic based expert system for

machinability data-on-demand on the Internet") was published in June of 2002 and **Wong**_{Feb2002} ("Development of

genetic algorithm-based fuzzy rules design for metal cutting data selection") was published in February of 2002.

10   Examiner <u>agrees</u> that those publication dates are correct.

In re page 6, Applicant has argued that therefore, neither **Wong**_{June2002} nor **Wong**_{Feb2002} can be applied as

prior art since both were published less than one year prior to the priority date of the present application.

Examiner <u>disagrees</u>. MPEP §706.02 (V)(C) states:

> If the application claims foreign priority under 35 U.S.C. 119(a)-(d) or
> 15   365(a)>or (b)<, the effective filing date is the filing date of the U.S. application,
> unless situation (A) or (B) as set forth above applies. **The filing date of the foreign**
> **priority document is not the effective filing date**, although the filing date of the
> foreign priority document may be used to overcome certain references. See
> MPEP § 706.02(b) and § 2136.05. (*emphasis added*)

20

Therefore, the instant application has an <u>effective filing date of 11/17/2003</u>. Then, MPEP §706.02(a) (II)(A) states:

> ... If the publication or issue date of the reference is **more than 1 year prior to the effective**
> **filing date** of the application (MPEP § 706.02), the reference qualifies as prior art under 35
> U.S.C. 102(b). ... (*emphasis added*)

25

Therefore, references qualify as prior art under 35 U.S.C. §102(b) against the instant application if the publication

date is more than a year prior to 11/17/2003. As Applicant has stated, **Wong**_{June2002} was published in June of 2002

and **Wong**_{Feb2002} was published in February of 2002. Therefore, both **Wong**_{June2002} and **Wong**_{Feb2002} were published

more than one year prior to the effective filing date of the instant application, thereby qualifying as prior art under 35

30   U.S.C. §102(b),

Looking at MPEP §706.02(b) and §2136.05, it is clear that although rejections based on 35 U.S.C. §102(e)

and/or 35 U.S.C. §102(a) can be overcome using a foreign priority document, a **rejection based on 35 U.S.C.**

§102(b) <u>cannot</u> be overcome based on a foreign priority document.

Therefore, in the rejections under 35 U.S.C. §103(a) presented below, it is clear that all of the references

used qualify as prior art under 35 U.S.C. §102(b). Applicant's arguments are <u>not</u> persuasive and the rejections under

35 U.S.C. §103(a) presented below are properly <u>maintained</u>.

5
<u>*Claim Rejections - 35 USC § 103*</u>

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this

Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in
> section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are
10 > such that the subject matter as a whole would have been obvious at the time the invention was made to a person
> having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the
> manner in which the invention was made.

Claims 9 and 12-17 are rejected under 35 U.S.C. 103(a) as being unpatentable over **Wong**$_{June2002}$ ("A fuzzy logic

15 based expert system for machinability data-on-demand on the Internet") and **Takagi** (USPN 5,168,549).

Independent Claim 9:

Wong$_{June2002}$ teaches:

- means operative in response to input data of a workpiece, the input data comprising workpiece characteristic

20   data including at least a material type and hardness of the workpiece (p57-65 especially "speed [of cut] and

feed [rate] are selected according to tool-workpiece material combination, depth of cut, and finishing

condition" §1 or "user to enter the inputs, they are tool type, workpiece material hardness and depth of cut"

§4 or "covers all materials for all types of possible machining process with all possible types of tool" §6 or

Figure 2);

25   - means of performing fuzzification of said input data to produce fuzzy input data (p57-65 especially Figure 3:

"fuzzification");

- an inference component operative to produce fuzzy output data from said fuzzy input data, the inference

component including fuzzy control means for applying a set of predefined fuzzy rules to said fuzzy input data

as to produce said fuzzy output data (p57-65 especially Figure 3: "Inference Mechanism" and "Rule Base"),

30   wherein the fuzzy output data comprises machining conditions including at least cutting speed and at least

one of depth of cut and feed rate data (p57-65 especially "speed [of cut] and feed [rate] are" §1 or Figure 3:

"Outputs" and "Cutting Speed" and "Feed Rate" or Figure 4: "Recommended Cutting Speed" and

"Recommended Feed Rate" and "Depth of Cut" or Figure 5: "Cutting Speed" and "Depth of Cut" and

"Hardness");

- means of performing defuzzification of said output data to produce crisp output data (p57-65 especially

5   "Defuzzification" Figure 3); and

- means of conveying said crisp output data to said machining environment (p65-67 especially "can be

integrated with CAM and CIM systems" §6 or Figure 4 or "Machining operators and design engineers can

obtain most up-to-date and first hand data virtually from anywhere" §6 or "users are expected to revisit the

site to collect or seek more machinability data for different conditions" §5).

10   Wong$_{June2002}$ fails to teach:

- the inference component including a multilayer neural network.

Takagi teaches:

- an inference component operative to produce fuzzy output data from fuzzy input data, the inference

component including a multilayer neural network and fuzzy control means for applying a set of predefined

15   fuzzy rules to fuzzy input data as to produce said fuzzy output data (C1-11 especially "neural network model

was learned 5,000 times to obtain the fuzzy number A^s of the IF part" C8L10-20 or "neural network model at

step 5 is used as the THEN part model for inference rule 1 ... neural network model with (x_2,x_3) inputs is

used as the THEN part. The resulting fuzzy model" C8L35-68 or "membership functions of fuzzy inference

rules are determined using the learning algorithm of the neural network" C9L20-56 or C9L56-C10L10).

20   Motivation:

Wong$_{June2002}$ and **Takagi** are from the same field of endeavor, fuzzy inferences of membership functions. It

would have been obvious to one of ordinary skill in the art at the time of the invention to modify the teachings

·of Wong$_{June2002}$ by including using a neural network in inferring the fuzzy membership functions as taught by

Takagi for the benefit of being capable of coping with the inference problem at high speed even it the

25   problem is non-linear (**Takagi** C3L10-35).

network" C9L20-56 or C9L56-C10L10 or Figure 9 or Figure 8 or Figure 4, including the associated

discussion in the disclosure for each figure).

Motivation:

Wong$_{June2002}$ and Takagi are from the same field of endeavor, fuzzy inferences of membership functions. It

would have been obvious to one of ordinary skill in the art at the time of the invention to modify the teachings

of Wong$_{June2002}$ by including using a neural network in inferring the fuzzy membership functions as taught by

Takagi for the benefit of being capable of coping with the inference problem at high speed even it the

problem is non-linear (Takagi C3L10-35).

Claim 12:

Takagi teaches:

- wherein said multilayer neural network comprises a network of summation neurons and product neurons

  (C1-11 and especially Figure 9 or Figure 8 or Figure 4, including the associated discussion in the disclosure

  for each figure).

Claims 13 and 16:

Wong$_{June2002}$ teaches:

- wherein said input data further comprises tool characteristic data and machining condition data (p57-65

  especially "speed [of cut] and feed [rate] are selected according to tool-workpiece material combination,

  depth of cut, and finishing condition" §1 or "user to enter the inputs, they are tool type, workpiece material

  hardness and depth of cut" §4 or "covers all materials for all types of possible machining process with all

  possible types of tool" §6 or Figure 2).

Claims 14 and 17:

Wong$_{June2002}$ teaches:

- wherein said input data further comprises cutting speed data, feed rate data, tool material data, and depth of

  cut data (C1-11 especially "speed [of cut] and feed [rate] are selected according to tool-workpiece material

  combination, depth of cut, and finishing condition. These speed and feed values are just good starting

Independent Claim 15:

Wong$_{June2002}$ teaches:

- means operative in response to input data of a workpiece, the input data comprising workpiece characteristic

    data including at least material type and hardness of the workpiece and depth of cut data (p57-65 especially

5   "speed [of cut] and feed [rate] are selected according to tool-workpiece material combination, depth of cut,

    and finishing condition" §1 or "user to enter the inputs, they are tool type, workpiece material hardness and

    depth of cut" §4 or "covers all materials for all types of possible machining process with all possible types of

    tool" §6 or Figure 2);

- an inference component operative to produce output data according to said input data (p57-65 especially

10   Figure 3: "Inference Mechanism" and "Rule Base"), the output data comprising machining condition data

    including at least cutting speed data (p57-65 especially "speed [of cut] and feed [rate] are selected" §1 or

    Figure 3: "Outputs" and "Cutting Speed" or Figure 4: "Recommended Cutting Speed" or Figure 5: "Cutting

    Speed");

- means of conveying said output data to said machining environment (p65-67 especially "can be integrated

15   with CAM and CIM systems" §6 or Figure 4 or "Machining operators and design engineers can obtain most

    up-to-date and first hand data virtually from anywhere" §6 or "users are expected to revisit the site to collect

    or seek more machinability data for different conditions" §5).

Wong$_{June2002}$ fails to teach:

- the inference component including a multilayer neural network, the multilayer neural network comprising a

20   network of summation neurons and product neurons.

Takagi teaches:

- an inference component including a multilayer neural network operative to produce output data from input

    data, the multilayer neural network comprising a network of summation neurons and product neurons (C1-11

    especially "neural network model was learned 5,000 times to obtain the fuzzy number A^s of the IF part"

25   C8L10-20 or "neural network model at step 5 is used as the THEN part model for inference rule 1 ... neural

    network model with (x_2, x_3) inputs is used as the THEN part. The resulting fuzzy model" C8L35-68 or

    "membership functions of fuzzy inference rules are determined using the learning algorithm of the neural

estimates" §1 or "showed the feasibility of incorporating depth of cut as one of the continuous parameters

required to determine the cutting speed" §1 or "Optimization of the fuzzy model was also carried out using

different fuzzy rules" §1 or "user to enter the inputs, they are tool type, workpiece material hardness and

depth of cut" §4 or "covers all materials for all types of possible machining process with all possible types of

5   tool" §6 or Figure 2 or Figure 5 or Appendix A or Table 8 or Table 9; *Examiner points out that it would have*

been well known in the art at the time of the invention to have a feedback loop which would input the actual

values of the controlled variables back into the control system).

Claim Rejections - 35 USC § 103

10   Claim 10 is rejected under 35 U.S.C. 103(a) as being unpatentable over **Wong**$_{June2002}$ ("A fuzzy logic based expert

system for machinability data-on-demand on the Internet") and **Takagi** (USPN 5,168,549) in view of **Wong**$_{Feb2002}$

("Development of genetic algorithm-based fuzzy rules design for metal cutting data selection").

Claim 10:

15   The combination of **Wong**$_{June2002}$ and **Takagi** fails to teach:

- ·   wherein said fuzzy rules are optimized according to a genetic algorithm.

Wong$_{Feb2002}$ teaches:

-    wherein said fuzzy rules are optimized according to a genetic algorithm (p1-12 especially §4 or Figure 1).

Motivation:

20   **Wong**$_{Feb2002}$ and the combination of **Wong**$_{June2002}$ and **Takagi** are from the same field of endeavor, fuzzy

control. It would have been obvious to one of ordinary skill in the art at the time of the invention to modify the

combined teachings of **Wong**$_{June2002}$ and **Takagi** by optimizing the fuzzy rules with a genetic algorithm as

taught by **Wong**$_{Feb2002}$ for the benefit of using a popular tool which has been used to effectively find optimal

solutions for a variety of problems to replace the tedious process of trial and error for better combination of

25   fuzzy rules (**Wong**$_{2000}$ "Optimization of fuzzy rules design using genetic algorithm" §1).

Conclusion

The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

- **Wong₁₉₉₇** ("Development of a Fuzzy-Based Expert System for Metal Cutting Data Selection").

5   **THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37

CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing

date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and

the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the

10   shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37

CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory

period for reply expire later than SIX MONTHS from the mailing date of this final action.

Claims 9-10 and 12-17 are rejected.

15

Correspondence Information

Any inquiry concerning this communication or earlier communications from the examiner should be directed

to Benjamin Buss whose telephone number is 571-272-5831. The examiner can normally be reached on M-F 9AM-

5PM.

20   As detailed in MPEP 502.03, communications via Internet e-mail are at the discretion of the applicant.

Without a written authorization by applicant in place, the USPTO will not respond via Internet e-mail to any Internet

correspondence which contains information subject to the confidentiality requirement as set forth in 35 U.S.C. 122. A

paper copy of such correspondence will be placed in the appropriate patent application. The following is a sample

authorization form which may be used by applicant:

25   "Recognizing that Internet communications are not secure, I hereby
                    authorize the USPTO to communicate with me concerning any subject
                    matter of this application by electronic mail. I understand that a copy of
                    these communications will be made of record in the application file."

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, David Vincent can be reached on 571-272-3080. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information

5   Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Benjamin Buss
Examiner
Art Unit 2129

/BB/

/DAVID VINCENT/
SUPERVISORY PATENT EXAMINER